

What Is Claimed Is:

1. A process for preparing compacted pigment granules, comprising the steps of:

5 (1) loading 1000-3000 kg of iron oxide powder having a grain size of not less than 0.8 microns at a temperature of 15-20 degrees C, into a mixer rotating at a speed of 1-25 rpm;

10 (2) spraying, while the mixer is rotating, liquid binder solution onto the cascading pigment powder, where the liquid binder solution is made by mixing 200-850 liters of water with 2.5-15 kg of polyvinyl alcohol binder powder, and where the liquid binder solution is sprayed at a rate of 40-200 liters per hour for 1-4 hours, whereby the cascading pigment powder is compacted into dense granules of approximately 0.3-1.2 mm diameter and having a moisture content of approximately 10-14%; and

15 (3) directing, while the mixer is rotating, heated air at a temperature of 200-600 degrees C onto the compacted pigment granules, so that the compacted

pigment granules are dried at a temperature of approximately 50-100 degrees C, and continuing this process for approximately 2-3 hours until the moisture content of the compacted pigment granules is reduced to approximately 2% or less, whereupon the compacted pigment granules are removed from the mixer.

2. A process for preparing encapsulated pigment granules, comprising the steps of:

(1) loading 1000-3000 kg of iron oxide powder, having a grain size of not less than 0.8 mm at a temperature of 15-20 degrees C, into a mixer rotating at a speed of 1-25 rpm;

(2) rotating the mixer for approximately 0.5-2.0 hours, with the pigment powder cascading within the mixer so as to result in the formation of pigment granules of approximately 0.30-1.20 mm diameter;

(3) spraying, while the mixer is rotated, liquid encapsulation solution onto the cascading pigment granules, where the liquid encapsulation solution is made by mixing 200-850 liters of water with 2.5-15 kg

of polyvinyl alcohol encapsulating powder, and where  
the liquid encapsulation solution is sprayed at a rate  
of 40-200 liters per hour, for 1-4 hours, whereby the  
liquid encapsulation solution encapsulates the  
cascading pigment granules, with the encapsulated  
pigment granules having a diameter of approximately  
0.30-1.2 mm diameter and a moisture content of  
approximately 10-14%; and

(4) directing, while the mixer is rotating,  
heated air at a temperature of 200-600 degrees C onto  
the encapsulated pigment granules, so that the  
encapsulated pigment granules are dried at a  
temperature of approximately 50-100 degrees C, and  
continuing this process for approximately 2-3 hours  
until the moisture content of the encapsulated pigment  
granules is reduced to approximately 2% or less  
whereupon the encapsulated pigment granules are  
removed from the mixer.

3. A process for dyeing landscaping and/or construction materials using compacted pigment granules, comprising the steps of:

(1) preparing compacted pigment granules by (i) loading 1000-3000 kg of iron oxide powder, at a temperature of 15-20 degrees C, into a mixer rotating at a speed of 1-25 rpm; (ii) spraying, while the mixer is rotating, liquid binder solution onto the cascading pigment powder, where the liquid binder solution is made by mixing 200-850 liters of water with 2.5-15 kg of polyvinyl alcohol binder powder, and where the liquid binder solution is sprayed at a rate of 40-200 liters per hour, for 1-4 hours, whereby the cascading pigment powder is compacted into dense granules of approximately 0.30-1.20 mm diameter and having a moisture content of approximately 10-14%; and (iii) directing, while the mixer is rotating, heated air at a temperature of 200-600 degrees C onto the compacted pigment granules, so that the compacted pigment granules are dried at a temperature of approximately 50-100 degrees C, and continuing this process for

approximately 2-3 hours until the moisture content of the compacted pigment granules is reduced to approximately 2% or less, whereupon the compacted pigment granules are removed from the mixer; and

5           (2) mixing the compacted pigment granules with the landscaping and/or construction materials in an environment where water is present, whereby the compacted pigment granules will break down and release their pigment powder for mixing with the landscaping and/or construction materials, whereby to dye the same.

10           4. A process for dyeing landscaping and/or construction materials using encapsulated pigment granules, comprising the steps of:

15           (1) preparing encapsulated pigment granules by  
20           (i) loading 1000-3000 kg of iron oxide powder having a grain size of not less than 0.8 microns, at a temperature of 15-20 degrees C, into a mixer rotating at a speed of 1-25 rpm; (ii) rotating the mixer for approximately 0.5-2 hours, with the pigment powder

cascading within the mixer so as to result in the formation of pigment granules of approximately 0.80-1.20 mm diameter; (iii) spraying, while the mixer is rotated, liquid encapsulation solution onto the cascading pigment granules, where the liquid encapsulation solution is made by mixing 200-850 liters of water with 2.5-15 kg of polyvinyl alcohol encapsulation powder, and where the liquid encapsulation solution is sprayed at a rate of 40-200 liters per hour, for 1-4 hours, whereby the liquid encapsulation solution encapsulated the cascading pigment granules, with the encapsulated pigment granules having a diameter of approximately 0.8-1.2 mm diameter and a moisture content of approximately 10-14%; and (iv) directing, while the mixer is rotating, heated air at a temperature of 200-600 degrees C onto the encapsulated pigment granules, so that the encapsulated pigment granules are dried at a temperature of approximately 50-100 degrees C, and continuing this process for approximately 2-3 hours until the moisture content of the encapsulated pigment

granules is reduced to approximately 2% or less  
whereupon the encapsulated pigment granules are  
removed from the mixer; and

(2) mixing the encapsulated pigment granules  
with the landscaping and/or construction materials in  
an environment where water is present, whereby the  
encapsulated pigment granules will break down and  
release their pigment powder for mixing with the  
landscaping and/or construction materials, whereby to  
dye the same.